Stock Quotes: Animal Health Newsletter

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Quarterly Newsletter from the Animal Health Bureau of the Montana Department of Livestock

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WHAT'S NEW

State Veterinarian Notes

TUBERCULOSIS INVESTIGATION WRAP-UP: Our epidemiologic investigation of a tuberculosis (TB) affected herd in Blaine County yielded no additional affected premises. To recap, the index herd was classified as 'affected' when 3 animals were detected through a whole-herd test after a cull cow with TB was found at slaughter in July 2021. The herd was subsequently depopulated with indemnity from the United States Department of Agriculture (USDA). Through this investigation, the department and federal staff tested nearly 8000 animals by caudal fold test (CFT) and tested 129 responding animals with a secondary test.

Montana has not had TB in cattle since the 1960s, and unfortunately, the source of this infection remains a mystery. DNA analysis established the closest match of this *Mycobacterium tuberculosis* strain to a 2006 isolate from a fed steer in southern Mexico. DOL will be conducting an assurance test this fall on a Madison County herd that also had a slaughter TB trace in 2021. An initial herd test did not yield any TB affected animals and, therefore, the herd was classified negative for TB.

ASSISTANT STATE VETERINARIAN VACANCY: With Dr. Tahnee Szymanski's departure, DOL has a vacancy for the Assistant State Veterinarian and we encourage anyone with an interest in population medicine, epidemiology, public health and policy to apply. The Assistant State Veterinarian at DOL is also the Chief of the Animal Health Bureau (AHB), with a focus on brucellosis risk management at the wildlife/livestock interface, tuberculosis epidemiology, equine herpesvirus response, enhancement of statewide testing for *Brucella canis*, emergency response preparedness, animal import controls, as well as moving the state to electronic documentation for health certificates.

We are grateful for all of Dr. Szymanski's contributions to animal and public health in Montana over the years of her service. Please view the position posting at the state of Montana careers webpage.

BRUCELLA CANIS TESTING: DOL remains committed to assisting veterinarians with *Brucella canis (B. canis)* testing and management decisions. A recent *B. canis* case highlights the importance of managing this disease and mitigating the potential zoonotic component. An animal owner assisted in the whelping of a litter that included weak or still born puppies in late fall 2022. With at least one of the puppies, the owner attempted mouth-to-mouth resuscitation. The bitch that whelped the litter subsequently tested non-negative for *B. canis*. The animal owner is now exhibiting signs of illness including weight loss, fevers and other generalized symptoms, which are concerning for possible brucellosis infection. The disease in the owner has not been confirmed to be canine brucellosis (due to lack of a simple testing process in humans) but antibiotic treatment was initiated. This incident highlights the important public health implications and emphasizes the necessity of reducing the incidence of *B. canis* in dogs.

Canine brucellosis seems to be significantly more common in dogs than we previously appreciated, and in the last year we've expanded the categories of animals that should be tested which includes:

- Animals from populations with a high number of intact, stray dogs.
- Intakes at shelter/rescues of a mature, intact animal with no testing history.
- Dogs with exposure to a known *B. canis* positive dog.
- Sexually intact dogs as part of a routine pre-breeding exam, as well as peripartuient dogs that were not tested prior to breeding.
- Dogs with symptoms consistent with *B. canis* infection which cannot be explained by other disease.

Many resources are available on DOL's website including case numbers, diagnostic decision trees, recommendations for clients, and zoonotic disease implications. ¤

By Martin Zaluski, DVM

Legislative Session Update

Montana Legislative session has passed the halfway mark. Below is a summary on several agency bills and their status.

MONTANA VETERINARY DIAGNOSTIC LABORATORY HB5: Every session, state infrastructure and building projects are funded through House Bill 5. This session, Department of Livestock (DOL) is asking for just over $2 million to fund the construction of the new Montana Veterinary Diagnostic Laboratory (MVDL). The majority of funding was provided during the 2021 Legislative session but as construction was delayed by COVID-19 and bringing on new partners, DOL has requested additional funds to accommodate inflationary increases. Assuming funding comes through for MVDL, as well as the Montana State University (MSU) Wool Lab, and Department of Agriculture analytical lab, DOL anticipates construction to start sometime this summer and the project to be completed in 2025. A new MVDL facility has been years in the making and DOL is tremendously excited for the additional capacity and service we will be able to provide for our Montana clients. As of late March, this bill is working its way through House Appropriations.

LIVESTOCK INDEMNITY HB51: For many years, we've been frustrated by the lack of resources to pay producers for occasional brucellosis reactors, or minor losses directly related to regulatory testing by state or federal employees. With the passage of HB 51 (signed by Governor Gianforte on March 16), DOL will set aside $10,000 a year to accrue to a balance of $100,000 for these expenses.

We recognize that the reserved amount is sufficient to only pay for minor losses however it's a solid starting point. Additionally, federal indemnity has been available in the state when needed for the depopulation of the tuberculosis (TB) affected herd, and highly pathogenic avian influenza (HPAI) affected flocks in 2022. Likewise, we expect federal indemnity to become available in cases of an introduction of a high consequence or animal disease such as African Swine Fever (ASF) or foot-and-mouth disease (FMD). The state indemnity, therefore, is really to help producers with compensation for brucellosis reactors and injuries during regulatory testing. This bill has now been signed into law by Governor Gianforte.

Figure 1. Montana State Legislature. Source: leg.mt.gov

PROHIBITION ON FEEDING GARBAGE TO SWINE HB84: Feeding meat waste to swine has been linked to numerous introductions of FMD around the world. In the 2001 outbreak of FMD in the United Kingdom (UK), international airplane food waste was identified as the source. Under Montana law, which DOL hopes will change soon, garbage (meat scraps) can be fed to swine as long as the products are heat-treated, and the entity is licensed by DOL. However, the last licensee stopped feeding garbage to swine at least five years ago, and this seems like the right time to forbid the risky practice altogether. In case you encounter your clients feeding food scraps to pigs, please note that garbage as defined is refuse that contains meat or meat products. It does not apply to the feeding of bread, milk, or vegetable waste. As of late March, this bill was passed by both the House and the Senate.

LIVESTOCK CONTAINMENT HB100: On rare occasions, Animal Health Bureau (AHB) staff have been frustrated when animals have not been gathered to allow necessary regulatory testing. These activities are scheduled with the livestock owner and often involve extensive travel by DOL staff, so it is highly disruptive, and expensive to reschedule this work. While these situations are extremely uncommon, DOL felt that when they do occur, DOL should be able to recoup the expenses for staff time and travel if those resources are wasted. As of late March, HB 100 has passed out of both House and Senate with near unanimous votes.

PENALTIES FOR UNINSPECTED LIVESTOCK HB388: AHB tracked approximately 150 illegal import over the last two years and expects that the actual number is much higher. Penalties for violations of import regulations have not been adjusted for inflation or the price of cattle, so purely on economics, there is little incentive to follow health certificate or permit import requirements. The department did not initiate work on HB388, but supports this effort. The bill increases penalties to a minimum of $500 per animal or up to $5,000, whichever is greater. As of late March, HB 388 was passed out of the House, and received a hearing in the Senate. ¤

By Martin Zaluski, DVM

Montana Veterinary Diagnostic Laboratory Updates

The Montana Veterinary Diagnostic Laboratory (MVDL) has been hard at work expanding test offerings.

SALINE BASED TRITRICHOMONAS FOETUS POLYMERASE CHAIN REACTION TEST (PCR): In February, MVDL announced the availability of a PCR assay to test samples collected in sterile saline for *Tritrichomonas foetus* (Tf). This assay accurately detects Tf RNA in clinical samples and is being offered at the same fee as our previous Tf PCR assay (individual samples are $30.90, pools of up to five samples are $56.65). Preputial washes, scrapings, or vaginal secretions may be collected in sterile saline or peripheral blood smear (PBS) at an approximate 1:10 ratio (e.g., ~1 mL sample to ~9 mL saline) and shipped on ice or frozen to the lab. While this assay reduces the need to collect in TF InPouch or InTube media, clients are welcome to continue to submit samples in the InPouch media (please note that submission in media is still required if culture is desired). Samples collected in expired TF InPouch/InTube media are still unacceptable for regulatory testing. MVDL is happy to offer pre-filled saline tubes to our clients for the cost of shipping; please call the lab or submit an order request form and allow us 7 business days to fill the order.

Figure 2. Saline Tubes Following Pooling. Source: MVDL

SMALL ANIMAL DIAGNOSTIC DIARRHEA PANELS: MVDL now offers canine and feline diagnostic panels for diarrheal disease. Each panel includes diagnostics to detect bacterial, viral, and parasitic agents in fecal samples, similar to our popular livestock neonatal diarrhea panel. The tests included in these panels (as well as submission and specimen requirements) can be found in our newly updated submission guide and fee schedule on our website. Please note that the feline panel requires submission of a serum sample in addition to feces in order to test for toxoplasmosis. The cost of the canine diagnostic diarrhea panel is $110.00 per sample, and the cost of the feline diagnostic diarrhea panel is $140.00 per sample.

ABORTION SEROLOGY PANELS: Available for equine, ovine, and bovine, these panels include a curated list of serologic tests for screening adult animals against common abortion-causing diseases. The equine panel is offered at a fee of $45.00 per sample and screens for antibodies to equine herpesvirus (EHV), equine arteritis virus (EVA), and leptospirosis. The ovine panel is offered at a fee of $50.00 per sample and screens for antibodies to toxoplasmosis, Q fever (*Coxiella burnetii*), *Brucella ovis*, bluetongue virus (BTV), and Bovine Viral Diarrhea Virus (BVDV). The ruminant (bovine) panel is offered at a fee of $50.00 per sample and screens for antibodies to *Neospora caninum*, bovine herpesvirus 1 (BHV-1), *Brucella abortus*, BVDV 1&2, and leptospirosis. Check MVDL's submission guide and fee schedule for more information at https://liv.mt.gov/Diagnostic-Lab/Guidance-Documents-and-Test-Fees.

NEW IMMUNODIAGNOSTICS OFFERINGS: In response to client feedback, MVDL is now offering a wide variety of new immunodiagnostic tests, including the BVDV SNAP test, *Brucella canis* Indirect Fluorescent Antibody (IFA) test, Canine Distemper Virus enzyme-linked immunosorbent assay (ELISA), Q Fever (*Coxiella burnetii)* ELISA, Epizootic Hemorrhagic Disease (EHD) agar gel immunodiffusion (AGID), EHV Serum Neutralization (SN) test, EVA SN test, *Neospora caninum* ELISA, Parainfluenza 3 (PI3) virus SN test, and a Toxoplasmosis IgG ELISA. Veterinarians can find specific information about necessary specimens, acceptable species, and cost per test in MVDL's submission guide and fee schedule.

PREGNANCY TESTS: MVDL now offers two options for pregnancy testing! The Relaxin Small Animal Pregnancy Test detects the presence of the hormone relaxin in canine and feline serum or plasma samples. Relaxin can be detected at or after the 4th week of pregnancy in dogs and as early as 25 days post-mating in cats. The cost of this test is $27.25 per sample. The Rapid Visual Pregnancy Test detects the presence of pregnancy-associated glycoproteins (PAGs) in whole blood, plasma, or serum of cattle, goats, sheep, and other ruminants. This test can be used to detect pregnancy in goats after 28 days of gestation, after 35 days of gestation in sheep, and after 60 days of gestation in cattle. The cost of this test is $4.60 per sample.

As always, we continue to strive to meet the diagnostic goals of our clients. We welcome client feedback and look forward to hearing about what other tests you'd like to see on the horizon! ¤

By Gregory Juda, PhD
Lab Director
Montana Veterinary Diagnostic Lab

Equine Herpes Virus (EHV) and Equine Biosecurity

This spring, Montana experienced several cases of EHV-1 myeloencephalopathy (EHM). In late January, a private veterinarian in Flathead County confirmed the disease in a horse with neurological disease after another horse on the premises died with similar symptoms. This outbreak ultimately involved four premises including an event arena and resulted in the death of five horses that were either confirmed or suspected with the disease. In March, Department of Livestock (DOL) became aware of a suspected case in eastern Montana unrelated to the Flathead incident. A number of points and recommendations relating to these outbreaks are worth mentioning.

TRAVELING HORSES SHOULD BE SEPARATED FROM THE RESIDENT POPULATION: On two of the four Flathead County affected premises, horses that succumbed to the disease had not recently left the premises. In both cases, asymptomatic traveling horses are likely to have brought back the virus after being exposed and sub-clinically infected at a group event.

TIMING OF VACCINATION MAY BE IMPORTANT: On at least one premises, the resident horses that died lacked good immunity. One horse on the index premises was young and was not yet fully immunized while the other horse that was euthanized was geriatric. There is no vaccine available that is labeled for, or protects against EHM, however, the vaccine reduces shedding, and is somewhat protective against the more traditional clinical signs, such as severe respiratory disease. American Association of Equine Practitioners vaccination recommendations include EHV vaccination if a risk assessment supports it. While a vaccine regimen should include a consultation with a veterinarian knowledgeable of the premises, herd health and other risk factors, vaccination should be seriously considered by any owner with horses traveling off premises to group events, although the timing of vaccination should be carefully planned.

Studies of EHM outbreaks involving vaccinated horses have shown that recent vaccination (within the previous 35 days before exposure) or more frequent vaccination with EHV-1 killed vaccines may contribute to vaccinated horses becoming EHM cases. The current recommendation is to vaccinate no more frequently than once per year and to time EHV-1 vaccination at least 60 days or more before an exposure is likely to occur (such as movement to a show or event).

EVENTS WITH MULTIPLE SOURCED HORSES HAVE AN INHERENT RISK: While we know this to be true, it's been shown that approximately 3% of all horses are shedding EHV at any one time. Increased stress through long transport, weather, unfamiliar stables, and physically demanding events can significantly increase the rate of shedding of the virus.

CONFIRMATION OF EHV REQUIRES CORRECT SAMPLES: Because EHV-1 and EHV-4 are endemic, and vaccination is commonplace, single serology is of limited value. Even unvaccinated horses will often have EHV antibodies, therefore, paired serum samples during the acute, and convalescent stage of the disease are needed for a diagnosis. A preferred sample is a polymerase chain reaction test (PCR) assay on whole blood AND a nasal swab; both samples are needed because of transient presence of virus in either specimen. Whole blood should be captured in EDTA, or alternatively in heparin. Nasal swab should be passed at least six inches into the ventral meatus of the horse's nasopharynx. Both nostrils should be sampled. Fresh brain can be tested by PCR on horses exhibiting neurological signs.

NON-EQUINE TRAFFIC PLAYS A KEY ROLE IN TRANSMISSION: Stopping equine movement has often been inadequate to stop the spread of infection within an equine facility. Continued movement of people, equipment, and animals in an affected barn makes it difficult to prevent spread between horses. The virus remains stable and infectious under a variety of conditions in water for up to three weeks, and likewise surfaces remain contaminated for several days (35 days under ideal conditions).

TEMPERATURE MONITORING IS IMPORTANT BUT HAS LIMITATIONS: EHV causes a biphasic fever that may dissipate by the time clinical symptoms are observed. Therefore, there may be a window late in the incubation period when fever subsides, and clinical symptoms are imminent. Regular temperature monitoring for high-risk horses is most effective.

BASIC BIOSECURITY PRACTICES SHOULD BE IMPLEMENTED AT ALL EVENTS, AND ENHANCED ON PREMISES WITH CLINICAL HORSES:

- Horses should travel on complete, accurate, and current documentation which allows an assessment of travel history, and health status.
- Traveling horses should be managed separately from the resident population during the event season.
- Newly purchased horses should be isolated for at least two weeks.
- Handwashing between horses, and especially between horses under different management, is important.
- Tack should not be shared between horses under different management.
- Access by pets should be limited.
- Common equipment should be disinfected between horses.
- Records should be kept of equine entries.
- Temperature monitoring of entries should be considered.
- A veterinarian should be available for consultation, health exams, and emergencies.

DOL wrote an article on equine biosecurity in the March 2015 Stock Quotes newsletter which can be found on our website here: https://liv.mt.gov/_docs/Animal-Health/Newsletters/2015_Mar_Newsletter.pdf. ¤

By Martin Zaluski, DVM

USDA Brucellosis Review

The United States Department of Agriculture (USDA) 2022 Review of Montana's Brucellosis Management Program again confirms that practicing veterinarians, livestock markets, cattle producers, and regulatory agencies are successfully protecting the United States cattle industry, and thus the marketability of Montana cattle, from the threat of brucellosis spill-over from wildlife. Key recommendations from the USDA review team include:

IMPROVE COMPLIANCE ASSESSMENT TIMELINESS: The most recent assessment compared movement records to testing records in Beaverhead County for FY21. Department of Livestock's (DOL) goal is to verify questionable tests and movements while those activities are still fresh for everyone.

EVALUATE TIME FROM SPECIMEN COLLECTION TO RESULTS COMMUNICATION: Livestock market personnel, market inspectors, and accredited veterinarians interviewed by the review team reported cases where results from field specimens were not yet available when cattle were sold. These reports raise concerns that duplicated testing reduces the efficiency of both commerce and the surveillance program. We ask for your comments regarding how commonly you and your clients encounter this. If this is a significant problem, DOL also wants to learn which steps from specimen collection to results communication create the most trouble.

UPDATE DSA PRODUCER LISTS MORE FREQUENTLY: DOL is updating the current Designated Surveillance Area (DSA) producer list as we compare Madison County movement records with brucellosis testing records. Producer reimbursement surveys provide an important way for DOL to gather this information. Those surveys do not, however, motivate managers to notify DOL when their operations stop utilizing land inside the DSA. DOL welcomes your recommendations regarding how we can efficiently record changes when operations start or stop utilizing the DSA during the January 15 to June 15 risk period.

ENSURE WILDLIFE SURVEILLANCE IN ALL RELEVANT AREAS: Montana Fish Wildlife and Parks (FWP) wildlife surveillance has so far successfully identified necessary DSA expansions while also identifying areas that DOL can safely exclude from the DSA. Cattle producers and FWP personnel also cooperate to minimize interactions between seropositive elk and livestock. The USDA review team is concerned that landowner reluctance to allow elk capture in some areas may limit the future effectiveness of wildlife surveillance.

ENSURE CONTINUED LIVESTOCK SURVEILLANCE: The USDA review team finds that livestock producers and regulatory agencies are effectively working together to mitigate the risk of infected cattle leaving the DSA. To maintain this level of cooperation, DOL is seeking opportunities to meet with you and your clients this spring to discuss the brucellosis program. DOL wants to hear ground-level perspectives and ideas to continue effective brucellosis control in Montana. ¤

By Brad De Groot, DVM , PhD

Secure Beef Supply Training Meetings

Producers who implement Secure Beef Supply (SBS) plans will be the first to reenter commerce in the case of a national scope disease event, while making their operations more resilient to introduction of common production diseases.

SBS Plan training meetings are scheduled at the Dillon 4-H Building on Tuesday April 4, 2023, the Headwaters Livestock Auction meeting room on Wednesday April 5, 2023, and the Great Falls College Montana State University (MSU) campus on Friday April 7, 2023. An SBS Plan specific to a particular beef operation is founded on three components:

1. A verified physical address (United States Department of Agriculture (USDA) PIN).
2. Movement logs for livestock, equipment, and visitors.
3. A biosecurity plan that includes a line of separation, a perimeter buffer area, access points, traffic patterns, and parking areas drawn on a satellite image of the operation.

SBS Plan discussions focus on the word "Plan" – transmission control measures that can be implemented if a disease outbreak makes them necessary. While the SBS Planning process will almost certainly identify ways each operation can reduce infectious agent exposure in routine processes, the objective of developing an SBS Plan is to document how an operation can continue operations and commerce in the face of a high-consequence, infectious disease outbreak while minimizing the risk of becoming infected. Assuring neighbors and customers that the operation's practices also protect them from collateral risk is an important aspect of SBS planning for continuity of business.

An example of practical considerations raised during discussions at the completed meetings include methods to keep cattle on different summer ranges epidemiologically separate. Driving through pastures to check cattle, water, and minerals doesn't pose a significant risk of disease transmission for most endemic pathogens. However, the potential presence of a durable pathogen such as Foot and Mouth Disease (FMD) virus might make high-pressure washing of wheels, fenders, and undercarriage with detergent a practical biosecurity measure in an outbreak. Other discussions focused on how communities of ranchers who must trade work, travel common roads, often through open range, receive shipments, and share natural water sources can apply functional biosecurity principles in their extensive and interconnected environments. Community will be a vital part of practical biosecurity in much of the big country.

Department of Livestock (DOL) has funding to pay $500 for each SBS Plan of approximately 40 total completed and approved by July 31 of this year. This payment compensates veterinarians for helping clients work through the SBS Planning process. DOL's goal is to have an experienced core of veterinarians and producers who can speak knowledgeably with peers about the SBS Planning materials and process. ¤

By Brad De Groot, DVM , PhD

Fish, Wildlife, and Parks Elk Surveillance Testing

The recently completed Fish, Wildlife and Parks (FWP) surveillance of 149 cow elk on the eastern front of the Pioneer Mountains in Beaverhead County detected no seropositive elk. The best brucellosis seroprevalence estimate is 0% of elk near the Pioneer Mountains seropositive and the 95% upper confidence limit of that estimate is 2.5% seropositive. Coupled with past surveillance testing and collared elk movement patterns in Beaverhead and Madison Counties, Department of Livestock (DOL) concludes that the Designated Surveillance Area (DSA) boundary in the Dillon area is well placed.

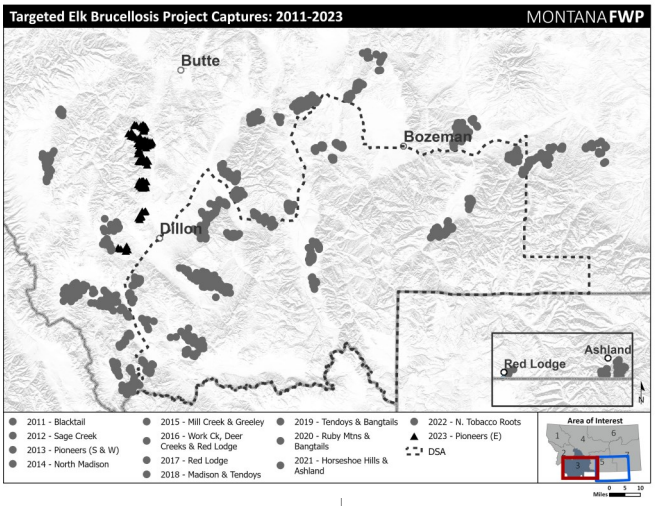

Figure 1. Targeted Elk Captures: 2011-2023 Source: FWP

The map shows where FWP has done elk brucellosis surveillance specifically for DSA risk assessment since initiation of the program in 2011. The overlapping, grey circles represent locations where individual elk were captured, with elk captured for this year's surveillance represented by the black triangles north and west of Dillon. DOL uses FWP conducted analyses of elk seroprevalence and collared elk movements to assess the need to contract, maintain, or expand the DSA boundary. ¤

By Brad De Groot, DVM; Jenny Jones, MS, FWP

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